

WHAT IS CLAIMED IS:

1. A twin disk type tool turret mechanism of a machine,
comprising:
 - 5 an internal tool turret for holding a plurality of tools thereon;
an external tool turret for holding a plurality of tools thereon;
an external toothed ring securely connected to the internal tool
turret; the external toothed ring having a gear fitted thereto;
a central shaft securely connected to the external tool turret; the
10 central shaft having a gear fitted thereto;
a power switching member capable of providing power to the
internal and the external tool turrets through the external toothed ring
and the central shaft respectively;
the power switching member including;
 - 15 (1) a power source, which is a servomotor, and which has a bevel
gear secured on an power output shaft thereof;
(2) a movable rotary sleeve engaging the bevel gear of the power
source at a bevel gear thereof; the movable rotary sleeve having a
plurality of engaging teeth on a middle section thereof;
20 (3) a transmission shaft passed into the movable rotary sleeve and
capable of being disengageably engaged with the engaging teeth of the
movable rotary sleeve at engaging teeth thereof for power to be passed
on to it through the movable rotary sleeve; the transmission shaft having

a pinion fitted to one end thereof, and engaged with the gear of the external toothed ring such that the internal tool turret will be made to rotate for allowing a tool choosing action by the power source when the transmission shaft is engaged with the movable rotary sleeve; and

5 (4) a transmission sleeve passed into movable rotary sleeve and capable of being disengageably engaged with the engaging teeth of the movable rotary sleeve at engaging teeth thereof for power to be passed on to it through the movable rotary sleeve; the transmission sleeve having a gear fitted to one end thereof, and engaged with the gear of the
10 central shaft such that the external tool turret will be made to rotate for allowing a tool choosing action by the power source when the transmission sleeve is engaged with the movable rotary sleeve;

the transmission shaft having a piston secured thereon, which is actuated, and displaced by means of power provided thereto through
15 passage conduits, such that the transmission shaft, and the transmission sleeve will be displaced to change between the engaging position and the disengaging position thereof when the piston is displaced with power provided thereto through the passage conduits.

2. A twin disk type tool turret mechanism of a machine,
20 comprising:

an internal tool turret for holding a plurality of tools thereon;

an external tool turret for holding a plurality of tools thereon; the internal and the external tool turrets being fitted together;

an external toothed ring securely connected to the internal tool turret;

a central shaft securely connected to the external tool turret; the central shaft having a large piston fitted thereto;

5 a power switching member capable of providing power to the internal and the external tool turrets through the external toothed ring and the central shaft respectively;

a clutch including an external ring clutch claw, and an internal ring clutch claw respectively securely connected to an inner edge of the
10 internal turret, and an inner edge of the external turret; the external and the internal ring clutch claws being capable of rotating, and engaged with each other at convexities and concavities formed thereon; the clutch having a fixed clutch claw, which is disposed on a fixing ring;

whereby when the large piston is actuated, and displaced, the
15 external turret will be forced to change position, and the internal and the external turrets will be left and right displaced simultaneously between a first position, in which they engage the clutch, and a second position, in which they disengage the clutch.

3. A twin disk type tool turret mechanism of a machine,
20 comprising:

an internal tool turret for holding a plurality of tools thereon;

an external tool turret for holding a plurality of tools thereon; the internal and the external tool turrets being fitted together;

an external toothed ring securely connected to the internal tool turret; the external toothed ring having a gear fitted thereto;

a central shaft securely connected to the external tool turret; the central shaft having a gear and a large piston fitted thereto;

5 a clutch; and

a power switching member capable of providing power to the internal and the external tool turrets through the external toothed ring and the central shaft respectively;

the power switching member including;

10 (1) a power source, which is a servomotor, and which has a bevel gear secured on an power output shaft thereof;

(2) a movable rotary sleeve engaging the bevel gear of the power source at a bevel gear thereof; the movable rotary sleeve having a plurality of engaging teeth on a middle section thereof;

15 (3) a transmission shaft passed into the movable rotary sleeve and capable of being disengageably engaged with the engaging teeth of the movable rotary sleeve at engaging teeth thereof for power to be passed on to it through the movable rotary sleeve; the transmission shaft having a pinion fitted to one end thereof, and engaged with the gear of the
20 external toothed ring such that the internal tool turret will be made to rotate for allowing a tool choosing action by the power source when the transmission shaft is engaged with the movable rotary sleeve; and

(4) a transmission sleeve passed into movable rotary sleeve and

capable of being disengageably engaged with the engaging teeth of the movable rotary sleeve at engaging teeth thereof for power to be passed on to it through the movable rotary sleeve; the transmission sleeve having a gear fitted to one end thereof, and engaged with the gear of the
5 central shaft such that the external tool turret will be made to rotate for allowing a tool choosing action by the power source when the transmission sleeve is engaged with the movable rotary sleeve;

the transmission shaft having a piston secured thereon, which is actuated, and displaced by means of power provided thereto through
10 passage conduits, such that the transmission shaft, and the transmission sleeve will be displaced to change between the engaging position and the disengaging position thereof when the piston is displaced with power provided thereto through the passage conduits;

the clutch including an external ring clutch claw, and an internal
15 ring clutch claw respectively securely connected to an inner edge of the internal turret, and an inner edge of the external turret; the external and the internal ring clutch claws being capable of rotating, and engaged with each other at convexities and concavities formed thereon; the clutch having a fixed clutch claw, which is disposed on a fixing ring, such that
20 when the large piston is actuated, and displaced, the external turret will be forced to change position, and the internal and the external turrets will be left and right displaced simultaneously between a first position, in which they engage the clutch, and a second position, in which they

disengage the clutch.

4. The twin disk type tool turret mechanism as claimed in claim 1 or 3, wherein the pinion of the transmission shaft will be engaged with an internal toothed section formed on a left side of a turret housing when the piston moves leftwards, thus allowing power to be passed on to the transmission sleeve as well as the central shaft to actuate the external turret, and the gear of the transmission sleeve will be inserted in, and secured with an internal toothed section formed on a right side of the turret housing when the piston moves rightwards, thus allowing power to be passed on to the transmission shaft as well as the external toothed ring to actuate the internal turret.

5. The twin disk type tool turret mechanism as claimed in claim 1 or 3, wherein a shaft is arranged between the transmission sleeve and the central shaft, and both a gear wheel and a pinion are secured on the shaft, and respectively engaged with the gear of the transmission sleeve, and the gear of the central shaft.

6. The twin disk type tool turret mechanism as claimed in claim 1 or 3, wherein final gear ratio of power transmission to the internal turret through the transmission shaft is equal to that of power transmission to the external turret through the transmission sleeve.

7. The twin disk type tool turret mechanism as claimed in claim 1 or 3, wherein the power source is a stepper motor instead.